

**CLAIMS**

1. A strain sensor which consists of a polymer that has been irradiated with less than  $1 \times 10^{15}$  ions /cm<sup>2</sup> in a portion of its surface with conducting tracks deposited onto the treated portion to enable the sensor to be connected to an external electric circuit.
2. A strain sensor as claimed in claim 1 in which the polymer is a polyimide film
3. A method of forming a strain sensor from a polymeric film which includes the steps of selectively irradiating a surface of the polymer with high energy radiation to change the composition of the polymer and increase the electrical conductivity in selected portions of the surface.
4. A method as claimed in claim 3 in which the high energy radiation carbonizes the polymer to form conductive particles in the polymer.
5. A method as claimed in claim 3 in which high energy ions impinge on a polymer film containing precursor metal compounds, such that decomposition of the precursor leads to nucleation of conducting metal particles.
6. A method as claimed in any preceding claim in which the polymer is a polyimide.
7. A method as claimed in any preceding claim in which conducting tracks are deposited onto the treated polymer to enable the device to be connected to an external electric circuit.
8. A strain sensor made by the method of any one of claims 3 to 7.